EXPLANATION OF PLATE XIII. (figs. 1–8).

*Fig.* 1. *Bdelloidina aggregata*, n. gen. et sp., on a portion of *Siderastræa*, magnified four diameters. *a*, convex margin of the last chamber, along which are arranged the "pseudopodial apertures" (see fig. 5, *a*); *b*, lines marking the septal limits of the chambers respectively. Diagram.

*Fig.* 2. The same: square indicating natural size.

*Fig.* 3. The same: portion of surface, magnified to show arenaceous composition of the test. Scale 1-48th inch to 1-1800th inch.

*Fig.* 4. The same: horizontal section of two chambers (upper half), to show:—*a*, septum between the two chambers; *b b*, holes of intercameral communication in the septa; *c c*, roof of chambers respectively, and internal pore-canal openings analogous to those in the shell of Nummulites. Same scale. Diagram.

*Fig.* 5. The same: vertical section of a chamber longitudinally, to show:—*a*, holes of intercameral communication through the septum; *b*, pore-tubulation ("labyrinthic structure") of the roof or upper wall of the chamber; *c*, basal wall or floor. Same scale. Diagram.

*Fig.* 6. The same: transverse section of the chamber vertically, showing:—*a*, cavity; *b*, walls; *c*, pore-tubulation or "labyrinthic structure." Same scale. Diagram.

*Fig.* 7. The same: portion of fig. 5 more magnified, to show:—*a*, septum; *b*, hole of intercameral communication; *c*, basal wall or floor; *d*, roof of chamber; *e*, pore-tubulation or "labyrinthic structure" amidst the sand-grains of the upper wall or roof; *f*, dark line indicative of the sarcodic layer. Diagram.

*Fig.* 8. The same: portion of fig. 4, *c c*, more magnified, to show that the pore-canal openings are deeply sunk in the interstices of reticulated rugæ pendent from the roof. *a*, rugæ; *b*, pore-canal openings.

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## XVI.—*On the Locality of* Carpenteria balaniformis, *with Description of a new Species and other Foraminifera found in and about* Tubipora musica. By H. J. Carter, F.R.S. &c.

[Plate XIII. figs. 9–15.]

In my paper on the Polytremata (Ann. & Mag. Nat. Hist. 1876, vol. xvii. p. 199) the following statement is made respecting the habitat and locality of *Polytrema balaniforme* = *Carpenteria balaniformis*, viz.:—

"*Hab.* Marine, on the valves of *Mytilicardia calyculata* and other objects, viz. *Pecten*, *Porites*, &c.

"*Loc.* West Indies? Indian Ocean."

"West Indies" was conjectural; and although I have every reason for concluding that the *Mytilicardia* on which my specimen of *P. balaniforme* had grown had come off a sponge, it was equally conjectural where that sponge had come from originally.

I now find, however, that the type specimens of *Polytrema balaniforme* in the British Museum partly cover both valves of *Mytilicardia variegata* in company with *Polytrema miniaceum*, labelled " *Carpenteria*, Philippines."

There is also another specimen on one valve only of a *M. variegata*; and this, too, is in company with specimens of *Polytrema miniaceum*. It is labelled "*Dujardinia*, Mediterranean."

Going to "Case 38" in the Shell-Room, we there find one specimen of *Mytilicardia variegata* with nothing upon it (it may have been *cleaned*)—and next to it a specimen from "Port Essington" (north coast of Australia), apparently bearing only the remains of *P. balaniforme*.

Close by may also be seen a specimen of *Mytilicardia calyculata*, labelled "Port Natal and Mediterranean;" and in the drawer below, a specimen of *Mytilicardia variegata* covered with *Polytrema miniaceum*, but no *P. balaniforme*,—labelled "Red Sea."

Following Chenu's representations, I have stated that my specimens of *Polytrema balaniforme* are on *Mytilicardia calyculata*; but I can see no difference between Chenu's figure of *M. calyculata* ('Manuel de Conchyliologie,' 1862, t. ii. p. 135, fig. 650) and my own specimen of this bivalve, which, again, is identical with that in the British Museum labelled *Mytilicardia variegata*; yet the difference between this and *M. calyculata* in the British Museum is very evident, although not very great.

In the drawer of the Case mentioned is another specimen of *M. variegata* covered with *Polytrema miniaceum*, labelled "Port Essington;" and a crab-claw submitted for my examination by Dr. Carpenter is also in the same state, but bearing among the specimens of *P. miniaceum* also one of *P. balaniforme*.

My inference, then, altogether is, that we should seek for specimens of *Polytrema balaniforme* on *Mytilicardia variegata* &c. from the *Polynesian Seas*.

It may be questioned whether *P. balaniforme* exists in the Mediterranean Sea, although *P. miniaceum* is abundant there and apparently in every sea within the parallels of 35° north and south of the equator.

From what has been above stated, the presence of *P. miniaceum*, on account of its red colour, might prove serviceable in finding out specimens of *P. balaniforme*, which, being colourless and very like a *Balanus*, are equally likely to escape notice, since the habitat of the latter is not confined to *Mytilicardia variegata* in the Polynesian Seas, but, according to the late Dr.

J. E. Gray, may be on *Porites*, *Cardita*, or *Pecten* (Proc. Zool. Soc. 1858, pt. xxvi. p. 266).

How far the specimen labelled "*Dujardinia*" above mentioned, on *Mytilicardia variegata* "from the Mediterranean," may be entitled to the generic distinction given to it by Dr. Gray (*op. et loc. cit.*), when it appears to me to differ only from *P. balaniforme* in the irregularity and obliquity of the reticulation on its surface, is a question which is thus answered. At the same time, while it appears to me to be only a variety of *P. balaniforme*, and I have stated that in all probability the latter is not to be found in the Mediterranean, even if *Mytilicardia variegata* exists there, the fact of the two having come from the Mediterranean is doubly doubtful.

(When desirous of obtaining the localities of the various specimens of sponges in the British Museum, the late Dr. Gray said to me, "You cannot depend for this on the statement in the 'Register;' for in many instances they have been purchased from 'dealers' or at sales." Certainly it is a great thing to know what does exist in the world; but the next wish is to know where it comes from, which hitherto has been too much neglected.)

After the foregoing observations on *Polytrema balaniforme* = *Carpenteria balaniformis* had been written, my kind friend, Mr. W. Vicary, of Exeter, lent me for examination a large globular specimen of *Tubipora musica* about as big as a man's head, said to have originally come from Australia, in and about which I found specimens of several species of Foraminifera, one of which, growing on the *Tubipora* itself, was so like *Polytrema balaniforme* that it was impossible to view it otherwise than as a species of this genus. Having resolved to describe and illustrate this species, it became necessary to name it; and in so doing the attempt to substitute "*Polytrema*" for "*Carpenteria*," made in my paper on the Polytremata, in the Ann. & Mag. Nat. Hist. of 1876 (vol. xvii. p. 201), for the reasons therein mentioned, proved to be attended by so many difficulties that I determined to revert to the old name of "*Carpenteria*" given to this Foraminifer by the late Dr. J. E. Gray (Proc. Zool. Soc. *l. c.*), still retaining it in the family of Polytremata, and, thus abandoning that of "*Polytrema balaniforme*" for "*Carpenteria balaniformis*," to make the new Foraminifer a species of this genus under the name of *Carpenteria monticularis*, which will now be described.

*Carpenteria monticularis*, n. sp. (Plate XIII. figs. 9–12.)

Monticular, with furrowed sides, jagged circumference and apertural apex; sessile. Composition calcareous, homogeneous (fig. 9, *a b*). Colourless, translucent. Surface even, uniformly covered with pores, traversed by longitudinal grooves extending from the summit to the circumference, indicating the limits of the chambers respectively (fig. 9 *d*). Aperture at the apex large, ear-shaped or spiral (fig. 9, *c c*), leading to a vertical columella, around which the chambers are situated, and into which they open alternately one after another, as they are successively developed on a spirally inclined plane extending from the base to the summit of the test. Chambers sac-shaped, conical, cylindrical or branched, dendriform (fig. 9, *b*), varying greatly in size, form, and arrangement; uniformly traversed throughout by large pore-tubes more or less closely approximated (fig. 12); chamber smooth within, often presenting *outside*, on *old* specimens, a raised network in relief, dividing the surface into an oblique reticulation whose interstices are irregular in size and shape. Size about one sixth inch in diameter; aperture about 1-60th to 1-30th inch in its longest diameter. Pore-tube about 1-1800th inch in diameter, varying in length with the thickness of the chamber-wall; pore itself about 1-5400th inch in diameter, or one third of that of the tube.

*Hab.* Marine. Growing on *Tubipora musica* and *Siderastrœa.*

*Loc.* ? Australia &c.

*Obs.* The chief distinguishing character between this and *Carpenteria balaniformis* is the presence of the reticular framework *in* the substance of the shell or chamber-wall of the latter, within whose circular interstices the pore-tubes, although general at first, are subsequently circumscribed (fig. 13, *a*, *b*); while in *C. monticularis* there is no such framework, and therefore the pores are dispersed generally and uniformly throughout the structure (fig. 12). The oblique reticulation "in relief" appears to be only in old specimens, as before mentioned. It differs from *Polytrema utriculare* chiefly in the latter having a separate aperture to each chamber. The genus termed "*Dujardinia*" by Dr. Gray (*op. et loc. cit.*) appears to be a specimen of *Carpenteria balaniformis* on *Mytilicardia variegata* with this kind of oblique surface-reticulation, as above mentioned. So, perhaps, when more is known about this interesting genus, all these forms, including *Polytrema utriculare*, may be found to run into each other inseparably; for the illustrations, viz. fig. 9, *a*, *b*, given of *Carpenteria monticularis* are by no means representative of all the specimens that I possess, which for the most part are extremely irregular in form.

The varieties in which the chambers are branched or dendriform in their outer two thirds (fig. 9, *b*) very much resemble the chambers of *Planorbulina retinaculata* (Park. & Jones, Phil. Trans. 1865, pl. xix. fig. 2) and some limacine forms of *Planorbulina* from Australia that I possess. Like *Planorbulina*, too, the pore-tubulation is very large and distinct in all the species of *Carpenteria* that have come under my notice, which, together with *Polytrema miniaceum*, might all perhaps in their earlier forms be reduced to a single planorbuline cell commencing in an embryonal chamber (figs. 14–17), which is followed by a helical development subsequently lost in the acervuline heap of cells that are developed around it on passing into its ultimate form.

Although it is not so easy to recognize the earlier forms of *Carpenteria* as those of *Polytrema miniaceum* (from the red colour of the latter), there is the difference in form to help us (compare fig. 11 with fig. 4, Ann. & Mag. Nat. Hist. 1876, vol. xvii. pl. xiii.); and thus it seems desirable to give a description and representation of some minute specimens (three) existing, in company with *Carpenteria monticularis* and *Polytrema atriculare*, on the specimen of *Siderastræa* bearing *Bdelloidina aggregata*. These, which, having escaped notice before they were detected by the microscope, had become more or less injured, are situated on a patch of *Webbina* whose moniliform contort strings of chambers, composed of grains of white calcareous sand &c., contrast strongly with the delicate, thin, transparent, homogeneous, glass-like, foraminated film of which the aggregated tests of the young *Carpenteriæ* are composed (fig. 11), the most perfect specimen of which is about 1-60th inch in diameter, and consists of a conical hollow pillar with circular aperture (fig. 11, *a*) rising from a great number of long foraminated chambers arranged in a radiating manner around its base, so as to produce a disk-like figure with jagged edges caused by the unequal extension of the chambers (fig. 11, *b*). In each of the three specimens the last-formed or upper chambers are glassy and colourless (fig. 11, *b*), while the lower or previously formed ones (fig. 11, *c*) present a hair-brown colour, arising apparently from dried brown sarcode within them. Close to the patch of *Webbina* &c. is a specimen of *Bdelloidina aggregata*; and there are many pieces of *Polytrema miniaceum* and cinnamon-coloured groups of *Planorbulina* scattered about the rest of the coral.

### *Polytrema miniaceum*, var. *album*.

Besides *Carpenteria monticularis*, the same piece of *Tubipora musica* bore specimens of red, cinnamon, and white varieties of *Polytrema miniaceum*, all branched, and so like each other that, but for the colour, no essential difference could be perceived between them; while a young specimen of the latter variety presented a distinct helical commencement from a primary or embryonal chamber, afterwards becoming lost in the acervuline group around it (fig. 14), like one kindly sent to me for examination by Dr. Carpenter; also a cinnamon variety presents a distinct embryonal cell, followed by an irregular helical development, finally surrounded by circles of chambers with straight radiating partitions (fig. 15), such as I have before figured in *Polytrema miniaceum* (Ann. & Mag. Nat. Hist. 1876, vol. xvii. pl. xiii. fig. 2), where the confused centre is also no doubt an irregular development of the helix. So that they all probably commence in this way; and where the colour does not assist, the irregular form of the chambers (fig. 14, *b*), together with the smaller size of the tubulation, may serve to distinguish the embryonic forms from those of *Planorbulina*.

In my paper on the Polytremata (Ann. & Mag. Nat. Hist. *t. c.* p. 206) I have stated that I possess several specimens of Australian *Orbitolites*, "in which the chambers are charged with embryos; the latter are all *elliptical* elongate." The "elliptical" form, I must say, always staggered me; but I now find that the largest of them present a line running through the long axis—which, together with the presence here and there of other minute Diatomaceæ, seems to indicate that they are all the frustules of a *Cocconeis*. The parasitic habit of this species is well known; and it is not improbable that in a still more minute form (for they only average 1-1800th inch in their longest diameter, with two to six in almost every chamber) they may have got into their present position through the stoloniferous apertures on the margin of the *Orbitolites*.

*Planorbulina larvata* (Parker and Jones, Phil. Trans. 1865, pl. xix. figs. 3, *a*, *b*).

The specimen of *Tubipora musica* also bore specimens of *Planorbulina larvata*, in a young one of which there is a distinct helical development from a primary embryonic chamber, afterwards followed by the usual forms (fig. 16); and in another instance a discoid regularly formed Foraminifer was found *outside* three distinct cells of *Planorbulina vulgaris* with their peculiar apertures (fig. 17, *b b b*, *c c*), which had been developed from the last of the helical chambers (fig. 17, *a*). To the former I have before alluded, as well as to the helical development, at first, of *Polytrema miniaceum*; and from them we learn that, however dissimilar the ultimate form of a Foraminifer may be, they all commence in the same way, viz. from a primary chamber or embryonic cell followed for a short distance by a helical development. Thus, like all other organized bodies, nothing is to be learnt beyond this from their commencement to predict what their ultimate forms respectively may be. That mystery of mysterious powers which presides over the future development, as well as the form of that development itself, is equally hidden from us in the *ovum* of all living beings—the latter until it makes its appearance, and the former probably for ever.

Hence all is unity in the beginning; and when it is considered that it would take 75 years 10 months and 10 days to ring the changes upon twelve bells or twelve varieties of the the unit, at the rate of 10 changes per minute, it does not seem strange that there should be so many varieties of living beings on the face of the earth—visual and auricular impressions considered correlatively.

The interior of the specimen of *Tubipora musica* was also found to contain a great number of loose Foraminifera, consisting of:—

*Calcarina Spengleri*, *C. hispida*, and *C. calcar*.

*Tinoporus baculatus*, De Montfort, and *T. vesicularis*, Carpenter, varieties *hemiphœricus* and *sphœroidalis*.

*Valvulina* (clavuline varieties), *Chiton*-like, vermicular, and Textularian.

*Orbitolites*, *Peneroplis*, *Orbiculina adunca*, *Heterostegina*, and *Dactylopora*.

The specimens of *Tinoporus vesicularis* are hemispherical and spheroidal respectively, depending upon their growing from a fixed or a free point: if from the former, they are sessile and hemispherical (fig. 19); if from the latter, free and spheroidal (fig. 18)—with a radiated structure in each instance, composed of conical columns of chambers (fig. 20), which chambers, being alternate in adjoining columns, the circumferential chamber of one of the columns is only half-developed (fig. 20, *d*, and 21, *e*), whereby the surface of the *Tinoporus* presents a pitted appearance, which, as the structure is very much like that of *Polytrema miniaceum*, might be taken for apertures of a canal-system; but a short examination will show that they only extend down to the next foraminated plate (fig. 21, *e*), and that *Tinoporus vesicularis* has no pseudopodial canal-system like that of *Polytrema miniaceum*, but is dependent entirely upon the foraminated plates of its chambers (fig. 21, *c*) for communication between the centre and the circumference, or the interior and the exterior.

Why Dr. Carpenter should have adopted De Montfort's name of *Tinoporus* for this genus, when he states (Introd. p. 223) that De Montfort considered *T. baculatus* as a variety of "*Nau-*

*tilus* (*Calcarina*) *Spengleri*" (which I shall show it to be hereafter), is to me inexplicable, seeing that the affinities of *Tinoporus vesicularis* are more with *Polytrema miniaceum*, from which, again, it is markedly different, as just stated, by possessing nothing even analogous to the pseudopodial canal-system of the latter.

There is as much difference between *Tinoporus baculatus* and *T. vesicularis* as there is between *Orbitoides* and *Orbitolites*. As *Orbitoides dispansa*, Sowerby, has a central plane of nummulitiform chambers arranged spirally with a convex, vertical, radiating development on each side of other chambers, of a compressed cellular form, intermixed with columns of solid shell-substance ending respectively in prominent tubercles on the surface and extending to the very margin of the disk, so has *Tinoporus baculatus* all this arranged around a *trochoid* spire. On the other hand, as *Orbitolites Mantelli*, Carter, has a central plane of orbitolitiform chambers (see Carpenter, Introd. pl. ix. fig. 8, *c' c' c' c'*, and compare with my figure, Ann. & Mag. Nat. Hist. 1861, vol. viii. pl. xvi. fig. 2, *b* and *g*) with a convex vertical radiating development on each side of other chambers of a compressed cellular form *without* the said columns of solid shell-substance, so does the structure of *Tinoporus vesicularis* extend in a radiating structure from an indistinct centre to the circumference (fig. 20, *b*; also see Carpenter, *op. cit.* pl. xv. fig. 3). The only means that *T. vesicularis* has of communicating with the exterior is, as before stated, through the foraminated plates of its chambers successively; while *T. baculatus* has a distinct system of interseptal canals for this purpose (Carpenter, *op. cit.* pl. xv. fig. 12).

All this the reader may find contrasted in two opposite columns of representations, side by side, in the Ann. & Mag. Nat. Hist. of 1861 (vol. viii. pl. xvi.), which, so far as *Orbitoides dispansa* and *Orbitolites Mantelli* are concerned, was all worked out by myself at Bombay in 1861, and published in the Ann. & Mag. Nat. Hist. before Dr. Carpenter's 'Introduction' of 1862. But Dr. Carpenter (Introd. p. 298, &c.) has thought proper to differ from me; and therefore I must leave the student of Foraminifera to decide which is right, merely observing that it is not satisfactory to be criticized by one whose observations show that he is not so well acquainted with the subject as yourself.

*Tinoporus baculatus* of De Montfort is, as before stated, a variety of *Calcarina Spengleri*. Out of the specimen of *Tubipora musica* have been obtained three species of *Calcarina*, viz. *C. Spengleri*, *C. hispida*, and *C. calcar*, together with *Tinoporus* *baculatus*. Each has a trochoid spire of chambers, from which circumferential spines are more or less projected horizontally, *but not all on the same plane*, as they come from the chambers of the *trochoid*; and all possess columns of solid shell-substance; but whereas in *Calcarina calcar* the pores or tubulation of the chambers open directly on the surface, in *C. Spengleri* they are prolonged into trumpet-shaped tubes whose open extremities in juxtaposition form the surface; and these in *C. hispida* are prolonged into points. "*Hispida*" is the designation given by Mr. H. B. Brady to this variety of *Calcarina* (Q. Journ. Micr. Sci. vol. xvi. p. 405, 1876), well represented by Dr. Carpenter (Introd. pl. xiv. figs. 6 & 7); while in *Tinoporus baculatus* the pore-tubulation of the chambers of the *trochoid* spire is continued to the surface through columns of cell-like chambers successively communicating with each other by pore-tubulation as in all other cases of the kind. The chambers appear to be alternate in adjoining columns, as in *Tinoporus vesicularis*: but here the resemblance ceases; for they are subtriangular or lunate in the vertical section, and not sub-square as in *T. vesicularis*; nor have I been able to see that they communicate with each other laterally in the same way as those of *T. vesicularis* (see fig. 21, *d*). All these may be minor differences; but when we find that *Tinoporus baculatus* possesses in addition a distinct system of interseptal canals circumscribing the chambers of the *trochoid* spire and apparently opening at the ends of the circumferential spines respectively, just as in *Operculina arabica* the canals of this system open on the surface of the marginal cord, it seems natural to conclude that if *Tinoporus baculatus* has no generic affinity with *Calcarina* it certainly has none with *Tinoporus vesicularis*.

On viewing the surfaces respectively of *Calcarina calcar*, *C. Spengleri*, and *C. hispida*, one cannot help being struck with their resemblance to similar ones on *Globigerina* and *Planorbulina*, wherein the simple pore-opening is often prolonged into a trumpet-shaped extension in the former, and a hispid or pointed form in the latter.

Dr. Carpenter evidently did not think the helix in *Tinoporus baculatus trochoid*, or he would not have applied the term "equatorial plane" to it (Introd. p. 227); and yet in the explanation to plate xv., with reference to fig. 12, he states that it is not distinguishable from *Calcarina*, using again the term "median plane" = "equatorial." Now no *trochoid* can have an equatorial or median plane; and as fig. 2 is stated in the explanation to represent a "section of the central portion of *T. baculatus* passing through the median plane," it seems to be a mistake; for half the chambers still possessing their tubulation shows either that the section had not passed through the "median plane," or that the helix is *trochoid*, which is really what the section does represent, judging from those that I have made myself of this Foraminifer.

EXPLANATION OF PLATE XIII. (figs. 9–29).

*Fig.* 9. *Carpenteria monticularis*, n. sp., on a portion of *Tubipora musica*. *a*, simple form; *b*, branched or dendritic form; *c c*, apertures respectively; *d*, lines or grooves marking the septal limits of the chambers. Magnified four diameters.

*Fig.* 10. The same: square indicating the natural size.

*Fig.* 11. The same: supposed embryonic form. *a*, prolonged tubular aperture; *b*, last-formed or upper chambers foraminated; *c*, lower or previously formed ones. Scale 1-48th to 1-1800th inch.

*Fig.* 12. The same: portion of surface to show the uniform pore-tubulation of the shell: same scale. Diagram. *a*, surface-ends of three pore-tubes, more magnified, to show the pore in the centre respectively: scale 1-12th to 1-1800th inch.

*Fig.* 13. *Carpenteria balaniformis*: portion of surface of the shell, to show the interrupted pore-tubulation, in contrast to that of fig. 12. *a*, circular interstices; *b*, reticulated framework; *c*, surface-ends of three pore-tubes, more magnified, to show the pore in the centre. Same scale as the foregoing respectively.

*Fig.* 14. *Polytrema miniaceum*, var. *album*: portion of basal layer, to show its commencement from an embryonic chamber in a helical form. *a*, embryonic portion; *b*, subsequently formed chambers. Scale 1-24th to 1-1800th inch.

*Fig.* 15. The same, var. *cinnamomum*, showing the same. *a*, embryonic portion; *b*, subsequently formed chambers. Scale 1-48th to 1-1800th inch.

*Fig.* 16. *Planorbulina larvata*, showing the same. *a*, embryonic portion; *b*, subsequently formed chambers. Same scale.

*Fig.* 17. *Planorbulina vulgaris*, showing the same, but with the embryonic portion *a*, *outside* the planorbuline chambers. *b b b*, planorbuline chambers; *c c*, their characteristic apertures. Same scale.

*Fig.* 18. *Tinoporus baculatus*, var. *sphæroidalis*, nat. size.

*Fig.* 19. The same, var. *hemisphæricus*, on a portion of *Tubipora musica*, nat. size.

*Fig.* 20. The same (spheroidal variety), much magnified, to show:—*a*, natural surface; *b*, hemispherical section; *c*, radiating columns of chambers; *d*, incomplete chambers. Diagram.

*Fig.* 21. The same: portion of the hemispherical section, more magnified, showing:—*a a a*, chambers; *b b*, partitions of solid shell-substance; *c*, foraminated or pore-tubulated plates; *d*, sides of the chambers pierced by one or more holes of intercameral communication; *e*, incomplete chamber. Diagram.

*Fig.* 22. The same, circumferential ends of three columns in juxtaposition, showing, *a*, the *in*complete chamber, and *b b*, the foraminated or pore-tubulated complete ones; corresponding with the diagram below.

*Fig.* 23. *Valvulina* —— ?, textularian, nat. size; from the specimen of *Tubipora musica*.

*Fig.* 24. The same: half of a horizontal or transverse section, seen from within, to show (in the right half only, the other having been left blank for convenience):—*a*, vertical view of the ends of the pore-tubulation on the septum; *b*, lateral view of the same, extending one third of the way through the wall of the test; *c*, the remaining portion formed of grains of calcareous sand, in the midst of which is the continuation of the pore-tubulation in the form of "labyrinthic structure," here omitted for perspicuity: scale 1-48th to 1-1800th inch. *d*, surface-end of pore-tube, more magnified, to show the pore in its centre: scale 1-12th to 1-1800th inch.

N.B. It should here be remembered that as the chambers are successively developed in *Valvulina*, the septum presents the same structure as the walls of the test—that is, that the upper or *inner* portion is pore-tubulated, and the *outer* or lower one arenaceous.

*Fig.* 25. The same: portion of surface magnified, to show, *a*, the angular pore-openings of the "labyrinthic structure" in the midst of the sand-grains. Diagram.

*Fig.* 26. *Lituola canariensis*, D'Orb., natural size.

*Fig.* 27. The same: magnified view, to show:—*a*, the large and small grains of quartz sand respectively of which the test is composed; *b*, the ends of the pore-tubulation or "labyrinthic structure" after slight abrasion of the surface. Diagram.

*Fig.* 28. The same: much more magnified, to show:—*a*, the holes of intercameral communication in the septum; *b b b*, the pore-tubulation or "labyrinthic structure" in the wall of the test; *c*, pseudopodial aperture; *d*, lines indicating externally the limits of the chambers respectively. Diagram.

*Fig.* 29. The same: portion of fig. 28, *d*, more magnified, to show the pore-tubulation or "labyrinthic structure" in the midst of the sand-grains composing the wall of the test. *a*, pore-tubulation; *b*, openings of the same on the inner surface of the wall; *c*, dark line indicating sarcodic lining; *d*, surface, consisting of large and small grains of quartz sand respectively, the latter forming a kind of cement to the former.

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## XVII.—*Descriptions of two new Genera and Species of Indian* Mantidæ. By Prof. J. Wood-Mason, Assistant Curator, Indian Museum, Calcutta.

### Genus Danuria, Stål.

#### Subgenus 1. Danuria.

1. *Danuria Thunbergi*, Stål.

*Hab.* Port Natal.

2. *Danuria Bolauana*, Sauss.

*Hab.* Zanzibar.

3. *Danuria superciliaris*, Gerst.

*Hab.* Zanzibar.